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10/767,000	01/28/2004	Douglas T. Bell	60055.0020USU1/03-0088A	5013

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EXAMINER
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NGUYEN, TU X

ART UNIT	PAPER NUMBER
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2618

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03/31/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/767,000	<b>Applicant(s)</b> BELL ET AL.	
	<b>Examiner</b> TU X. NGUYEN	<b>Art Unit</b> 2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1)  Responsive to communication(s) filed on 29 January 2008.
- 2a)  This action is **FINAL**.                      2b)  This action is non-final.
- 3)  Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4)  Claim(s) 1-30 and 36-38 is/are pending in the application.  
4a) Of the above claim(s) 31-35 is/are withdrawn from consideration.
- 5)  Claim(s) 27 and 28 is/are allowed.
- 6)  Claim(s) \_\_\_\_\_ is/are rejected.
- 7)  Claim(s) 7 is/are objected to.
- 8)  Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9)  The specification is objected to by the Examiner.
- 10)  The drawing(s) filed on 28 January 2004 is/are: a)  accepted or b)  objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11)  The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12)  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a)  All    b)  Some \*    c)  None of:
1.  Certified copies of the priority documents have been received.
2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3.  Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments filed 1/29/08 have been fully considered but they are not persuasive.

In response to Applicant's argument "Sarraf reference discloses a two-way out-of-band signaling and communications (S&C) capability. That is, "S&C" refers to out-of-band signaling traffic that is not part of the underlying IF signal. Referring again to the language of Sarraf reproduced above, the reference describes separating the out-of-band control from the beam's IF signal and then providing these control signals to other destinations. Importantly, the reference describes the extraction and routing of control data that is transmitted separately from the underlying IF signal. It does not describe channelizing the sub-band "into a plurality of frequency slices/data packets" and then routing these channelized slices/packets to receiving ports for reassembly into output sub-bands". The Examiner agrees that Sarraf discloses the S&C out-of-band signaling, however, the Examiner does not rely on other features of Sarraf teaching, the Examiner relies on Sarraf teaching "UFSM 15 selects the active sub-bands from each received IF signal and passes them to one of m B-type input-ports 17 (for

broadcast-traffic) of DRSP 60 for further processing. DRSP 60

demodulates the

incoming carriers, recovers the individual service data-streams and

multiplexes

them into N downlink broadcast channels 70 (BC#I-N) (see col.5 lines 54-65).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-2, 4-6, 8, 14-15, 18-19 and 29-30, are rejected under 35 U.S.C. 102(e) as being anticipated by Sarraf (US Patent 6,574,794).

Regarding claim 1, Sarraf discloses a digital payload for processing a sub-band spectrum received on an uplink beam at a communications satellite, the digital payload comprising:

a digital channelizer configured to divide the sub-band spectrum into a plurality of frequency slices (see col.6 lines 4-6, “separate sub-band” corresponds to “frequency slices”);

a digital switch matrix configured to route each of the plurality of frequency slices to at least one of a plurality of receiving ports (see fig.3, element 15, col.6 lines 4-9); and

a digital combiner (see fig.3, element 63) configured to communicate with the receiving ports to receive the plurality of frequency slices and to re-assemble the plurality of frequency slices to thereby form a plurality of output sub-bands for transmission on an output beam of the communications satellite (see col.5 lines 44-64).

Regarding claim 2, Sarraf discloses a digital regeneration module (see fig.3, element 60, col.5 lines 49-50) configured to demodulate at least a portion of the sub-band spectrum to extract a digital bitstream therefrom (see col.4 lines 60-65), to digitally process the bitstream, and to remodulate the bitstream after processing (see col.6 lines 1-19).

Regarding claim 4, Sarraf discloses the digital regeneration module is further configured to digitally process the bitstream by performing code division multiplexing (see col.6 lines 1-7).

Regarding claim 5, Sarraf discloses the digital regeneration module is further configured to digitally process the bitstream by performing access control (see col.6 lines 53-55).

Regarding claim 6, Sarraf discloses the digital regeneration module is further configured to digitally process the bitstream by performing network registration (see col.4 lines 13-15 and col.4 lines 36-43, “authorize access” and “the data streams related to all of the service-programs or applications they have subscribed to” corresponds to “network registration”).

Regarding claims 8 and 19, Sarraf discloses steps of monitoring the sub-band spectrum to identify changes in bandwidth consumption and adjusting the routing step in response to the changes to thereby improve the efficiency of the digital payload (see col.8 line 60 through col.9 line 10).

Regarding claim 14, Sarraf discloses an all-digital payload for processing a plurality of sub-band spectra received on a plurality of uplink beams at a communications satellite, the digital payload comprising:

a digital channelizer configured to divide each of the sub-band spectra into a plurality of data packets (see col.6 lines 4-6, "separate sub-band" corresponds to "divide sub-band");

a digital switch matrix configured to route each of the plurality of data packets to at least one of a plurality of receiving ports (see fig.3, element 15, col.6 lines 4-9);

an embeddable digital regeneration module in communication with the digital switch matrix, wherein the digital regeneration module is configured to demodulate at least a portion of the plurality of data packets to extract a digital bitstream therefrom, to digitally process the bitstream, and to remodulate the bitstream after processing (see col.5 lines 44-64); and

a digital combiner configured to communicate with the receiving ports to receive the plurality of data packets and to re-assemble the plurality of data packets to thereby form a plurality of output sub-bands for transmission on an output beam of the communications satellite (see fig.3, element 64).

Regarding claim 15, Sarraf discloses a method of processing a sub-band spectrum received on an uplink beam at a digital payload for a communications satellite, the method comprising the steps of: digitally dividing the sub-band spectrum into a plurality of frequency slices; routing each of the plurality of frequency slices to at least one of a plurality of receiving ports; and digitally processing at least a portion of the frequency slices; and digitally re-assembling the portion of the plurality of frequency slices after processing to thereby form a

plurality of output sub-bands for transmission on an output beam of the communications satellite (see fig.3, see col.5 lines 44-64).

Regarding claim 18, Sarraf discloses the routing step comprises simultaneously routing at least a portion of the plurality of frequency slices to multiple receiving ports to thereby implement a multi-cast function (see col.5 lines 44-54).

Regarding claim 29, Sarraf discloses means for processing a sub-band spectrum received on an uplink beam at a communications satellite, the means for processing comprising: means for dividing the sub-band spectrum into a plurality of frequency slices; means for routing each of the plurality of frequency slices to at least one of a plurality of receiving ports; and means for communicating with the receiving ports to receive the plurality of frequency slices and to re-assemble the plurality of frequency slices to thereby form a plurality of output sub-bands for transmission on an output beam of the communications satellite (see fig.3, see col.5 lines 44-64).

Regarding claim 30, Sarraf discloses a means for digitally regenerating the sub-band spectrum, wherein the means for digitally regenerating comprises means for demodulating at least a portion of the sub-band spectrum to extract a digital bitstream therefrom, means for digitally processing the bitstream, and means for remodulating the bitstream after processing (see col.5 lines 44-64).

Regarding claim 36, Sarraf discloses everything as claim 1 above; more specifically, Sarraf discloses the digital regeneration module is further configured to digitally process the bitstream by performing network registration (see col.4 lines 13-15 and col.4 lines 36-43, "authorize access" and "the data streams related to all of the service-

programs or applications they have subscribed to” corresponds to “network registration”).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf (US Patent 6,574,794) in view of Ramesh et al. (US Patent 5,870,406).

Regarding claim 3, Sarraf fails to error correction.

Ramesh et al. disclose error correction (see col.3 lines 3-4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with the above teaching of Ramesh in order to detect errors and make correction of data packet.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf 1(US Patent 6,574,794) in view of Sarraf 2 (US Patent 6,157,812).

Regarding claim 9, Sarraf 1 fails built-in test circuit.

Sarraf 2 disclose built-in test circuit (see col.8 lines 33-34). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the



system of Sarraf 1 with the above teaching of Sarraf 2 in order to provide a reliability self-test and initialization.

Claims 10-13, 16-17, 20 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf 1(US Patent 6,574,794) in view of Campanella (US Pub. 2001/0012277).

Regarding claims 10-11 and 16-17, Sarraf fails an analog to digital (A/D) converter configured to receive the uplink beam and to produce the sub-band spectrum therefrom.

Campanella discloses an analog to digital (A/D) converter configured to receive the uplink beam and to produce the sub-band spectrum therefrom (see fig.4, element 54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with the above teaching of Campanella in order to provide a converter to convert data to digital signal.

Regarding claims 12-13 Saraf fails to disclose a digital-to-analog (D/A) converter.

Campanella discloses a digital-to-analog (D/A) converter (see fig.4, element 59) Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with the above teaching of Campanella in order to provide a converter to convert digital signal to analog signal.

Regarding claims 20 and 38, Sarraf discloses everything as claim 1 above. However, Sarraf fails to disclose “an analog-to-digital (A/D) converter configured to convert the digital output sub-bands (see fig.4, element 54). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with

the above teaching of Campanella in order to provide a converter to convert digital signal to analog signal.

Claims 21-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sarraf 1(US Patent 6,574,794) in view of Campanella (US Pub. 2001/0012277) further in view of Lazaris-Brunner et al. (US Patent 6408164).

Regarding claim 21, the modified Sarraf fails to disclose the A/D converter is further configured to sample the uplink beams at an IF frequency.

Lazaris-Brunner et al. disclose the A/D converter is further configured to sample the uplink beams at an IF frequency (see col.6 lines 37-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with the above teaching of Lazaris-Brunner et al. in order to prevent interfering from signal interest.

Regarding claim 22, the modified Sarraf fails to disclose the D/A converter is further configured to sample the output sub-bands at an RF frequency.

Lazaris-Brunner et al. disclose the D/A converter is further configured to sample the output sub-bands at an RF frequency. (see col.6 lines 37-49). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with the above teaching of Lazaris-Brunner et al. in order to prevent interfering from signal interest.

Regarding claims 23-26, the modified Sarraf fails to disclose the uplink antenna is a digital beam-forming antenna.

Lazaris-Brunner et al. discloses disclose the uplink antenna is a digital beam-forming antenna (see col.5 lines 36-37). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Sarraf with the above teaching of Lazaris-Brunner et al. in order to only signals received from the desired direction

***Allowable Subject Matter***

Claims 27-28 and 37, are allowed.

Claim 7, objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Regarding claims 7 and 37, the prior art fails to teach "the digital regeneration module is further configured to digitally process the bitstream by performing cryptographic manipulation of the bitstream", as cited in the claim.

Regarding claim 27, the prior art fails to teach "a backplane housing having a backplane bus; and a plurality of processing cards, each processing card comprising: a channelizer circuit configured to receive the sub-band spectrum and to divide the sub-band spectrum into a plurality of frequency slices", as cited in the claim.

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed Tu Nguyen whose telephone number is 571-272-7883.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Urban, can be reached at (571) 272-7899. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tu X Nguyen/

Patent Examiner, Art Unit 2618

3/25/08